

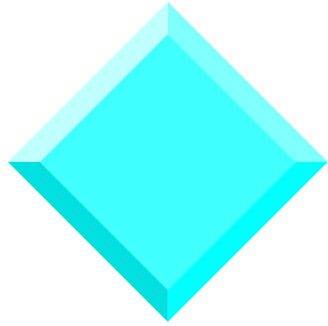
# **CECOM**

## **Directorate of Safety Risk Management**



### **LAR**

## **Safety Information on the Job**



# ***Ergonomics***

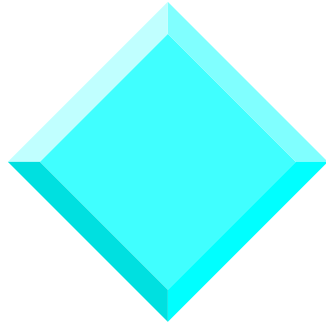
**Definition** -The science of designing the workplace & tasks to accommodate the worker.

**Benefits** - Improved: productivity; efficiency; morale  
Decreased: lost work days; turnover; comp, injuries.

## **Risk Factors**

*(over a 2 hour period)*

- **Repetitive motion or pattern, Fixed or awkward posture**
- **Forceful hand exertions**
- **Unassisted frequent or heavy lifting**



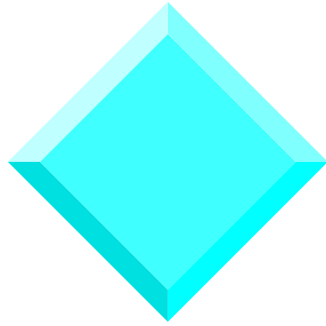
# ***Ergonomics***

## **Cumulative Trauma Disorders (CTD):**

Affect body parts that perform tasks. Soft tissues, i.e. muscles, tendons, and nerves become swollen or injured. Stress is more than your body can handle.

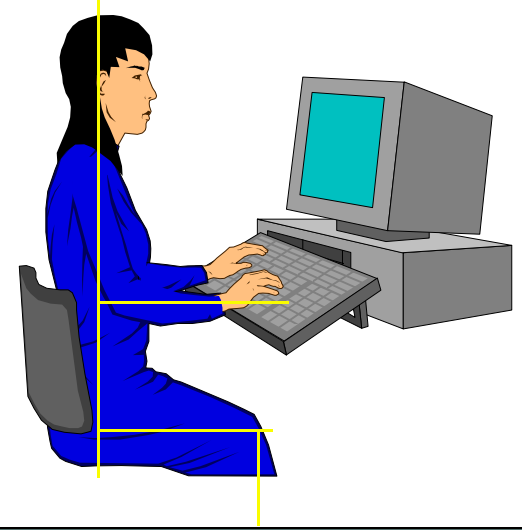
## **Carpal Tunnel Syndrome:**

Overextension or twisting of the wrist under force.  
Inflammation or swelling of the median nerve which runs through a channel in the wrist. This swelling compresses the ligaments causing burning itching, prickling or tingling feelings of the wrist or first three fingers and thumb.



# ***Ergonomics***

## ***Video Display Terminals***



### **POSTURE**

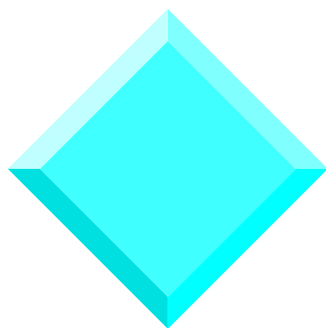
- o Maintain backs natural curves
- o Elbows close to body
- o Forearms parallel to floor
- o Wrists straight & knees even w/hips or lower

### **CHAIR**

- o Adjust height so forearms & thighs are parallel to floor
- o Support lower back
- o Rest feet on floor or footrest

### **Work Area**

- o Screen top at or slightly below eye level
- o Screen at arm's length from eyes(at least 18 ")
- o Wrist rest to support wrists(Don't rest wrist while typing)
- o Keep objects at easy reach



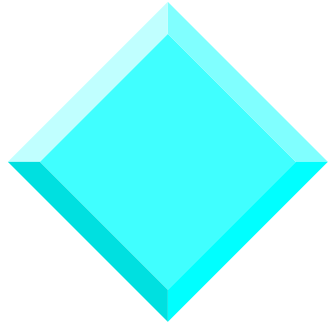
# *Lifting*

## *Weight Limits*

### *MIL-STD 1472*



	Lift 5 feet	Lift 3 feet	Carry 33 feet
<b>Male/Female</b>			
<b># of People</b>			
1	37	44	42
2	74	88	84
3	102	121	115.5
4	157	154	147
<b>Male Only</b>			
<b># of People</b>			
1	56	87	82
2	112	174	164
3	154	239	225.5
4	196	304	287



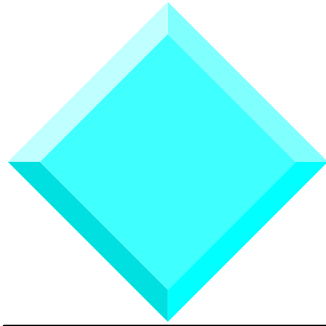
# ***Lifting***

## ***Back Supports: Rigid Vs. Soft Elastic***

Elastic style are more comfortable, however; rigid style increase intra-abdominal pressure, which provides more support to the stomach/back muscles and vertebrae.



*Support Belts **DO NOT** increase lifting potential!*



# Noise

***Damage done by noise depends mainly on how loud it is and the length of exposure. Also, high pitch sounds are more damaging than low pitch sounds. Noise induced hearing loss is PREVENTABLE!***

## **Exposures:**

**Temporary** - Noise may tire out the inner ear causing a temporary hearing loss. After rest, it is restored.

**Permanent** - With continual noise exposure the ear loses ability to recover.

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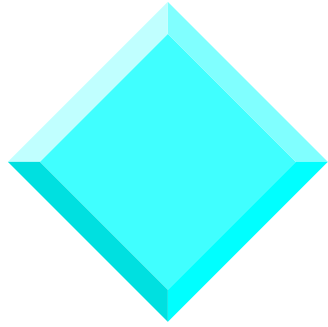
## **Factors influencing hearing loss**

o **Steady state(85 dbA)**

Frequency & intensity  
exposure duration

o **Impulse(140dbA)**

Peak pressure, duration  
#impulses, frequency,



# *Noise*

## **Symptoms of hearing loss**

- “Tinnitus” , ringing in the ear.
- Temporary muffling of sound.
- Sensation of fullness in the ears.
- Words are not understood when spoken

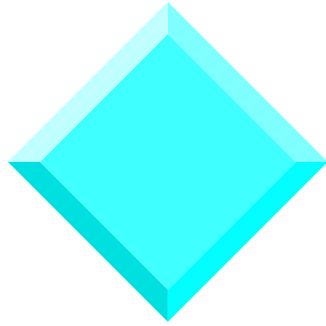


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**Effects of Exposures** - High frequency sounds cannot be heard. Speech or other sounds may be unclear/distorted.

- “Tinnitus” , ringing in the ear.
- Quicken heart rate, increased blood pressure.
- Nervousness, sleeplessness and fatigue.

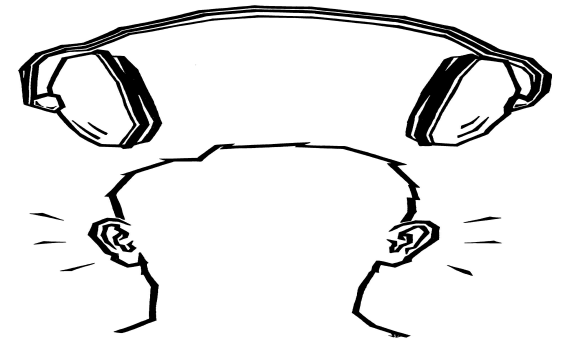
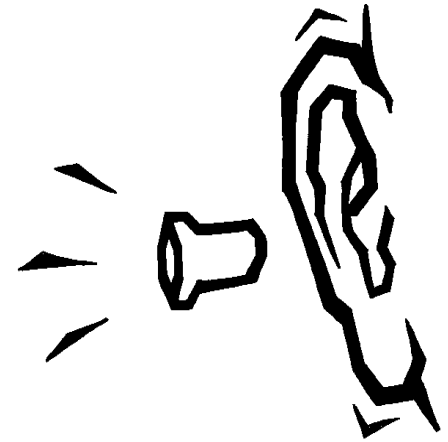


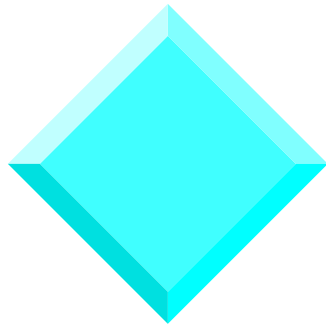


# *Noise*

## **Hearing Protectors**

- **Earplugs**- Preformed, Hand formed
- **Noise muffs**- Fit snug
- **Helmets**- Aviator and combat vehicle helmets attenuate noise
- **Earcup seals**- replace when torn



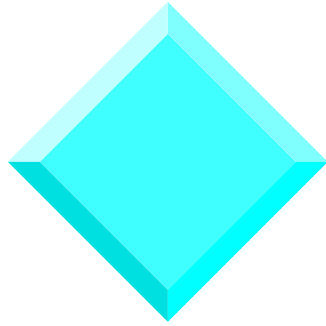


# ***Heat Stress***

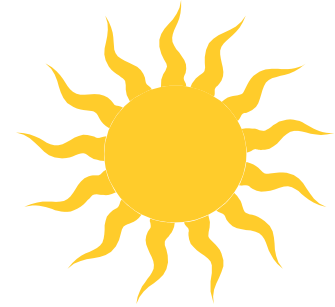
***Body temperature few degrees above normal could lead to muscle cramps, weakness & disorientation. Above 105F could be fatal.***

**Heat induced illnesses include:  
Fatigue, rash, cramps, exhaustion, stroke, fainting**

Illness	Symptoms	Causes
Cramps	muscle spasms in legs/abdomen	Overexposure to heat dehydration exertion
Exhaustion	tired, dizzy, nausea, headache exhaustion, pale or flushed skin	
Heatstroke	headache, confusion, high temp, red, hot dry skin, stop sweating	



# ***Heat Stress***



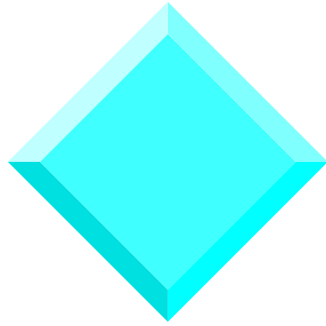
## **Conditions that contribute to heat related illness**

**Environment - High: temp, altitude or humidity, air movement, heat sources**

**Clothing - Heavy, bulky with low permeability**

**Workload - Work/rest cycles**

**Personal Susceptibility - Age, weight, diet, exercise, Acclimation, vices**



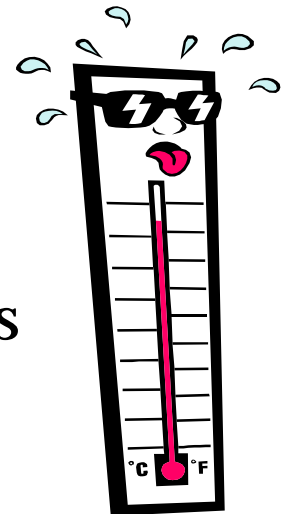
# ***Heat Stress***

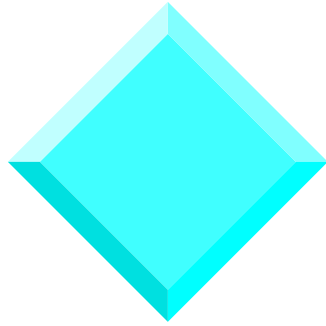
## **How to Manage Heat Stress**

- Adapt to the heat - Work/rest cycle, rest in cool place, ease into routine
- Fluid Replacement - 8 ounces every 20-30 minutes, avoid alcohol, coffee & tea, NO SALT TABLETS
- Clothing - Wear breathable fabrics

## **Treating Heat Stress**

- Rest in the coolest available place, apply wet cloths
- Drink cool rather than cold fluids
- Loosen or remove clothing,
- Seek first aid





# *Cold Stress*

## *Hypothermia*

***Hypothermia is an abnormally low internal body temperature.  
Temperatures do not have to be below freezing of to occur.***

### **Symptoms**

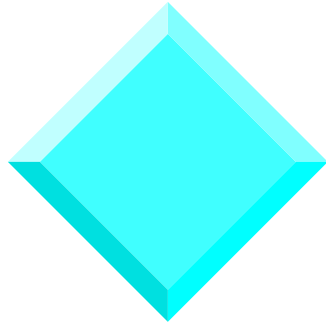
**Muscles - Stiffness and/or trembling in Neck, Arm or Leg**

**Shivering - Diminished or absent in older adults**

**Face/Skin - Puffy, swollen, Cool w/pale lg. blue/pink spots**

**Breathing/Heart Rate - Slowed, difficult to detect**

***Confusion worsens as body temp falls leading to disorientation. Some victims may still be conscious when body temp falls to 80 degrees!!!!***



# *Cold Stress*

## ***Frostbite***

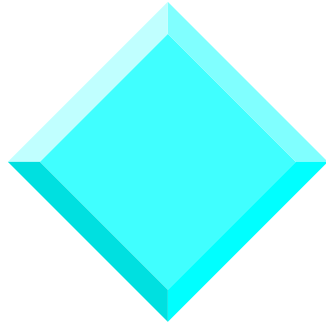
***Frostbite occurs when the fluids around body tissues freeze.***

### **Symptoms**

Coldness and tingling in affected part, followed by numbness. Changes in skin color to white or grayish-yellow, initial pain which subsides as condition worsens, possible blisters.

**Affected Parts** - nose, cheeks, ears, fingers and toes.

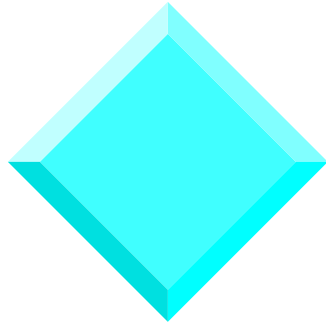
***Frostbite can occur without accompanying hypothermia!***



# *Cold Stress*

## **How to manage Cold Stress**

- **Dress in Layers** - Preserve air space. Cotton or wool. Protect feet, hands, head and face.
- **Keep dry** - Wetness increases cold stress. Extra clothing.
- **Take breaks** - Fatigue interferes with heat retention. Replace fluids and calories w/warm, sweat caffeine/alcohol -free drinks and soup.
- **Eat right** - Nutrients help you withstand cold stress.
- **Don't work alone** - Look out for one another, be alert for symptoms



# *Cold Stress*

## **Treating Frostbite**

- **Never rub affected area.**
- **Warm gently by soaking.**
- **Loosely bandage the area.**
- **Don't break blisters.**

## **Treating Hypothermia**

- **Call for immediate medical attention!!!!**
- **Handle w/care. Remove wet cloths, Cover w/blanket.**
- **DO NOT attempt to rewarm too quickly.**
- **Do NOT give food or drink.**
- **Do NOT raise the feet.**